

**Analysis of the effects of conditional products on
the efficiency and integration of the EU gas
markets - Preliminary results**



**Stakeholders' Workshop
Brussels, 4 December 2018**

Introduction on Task 2

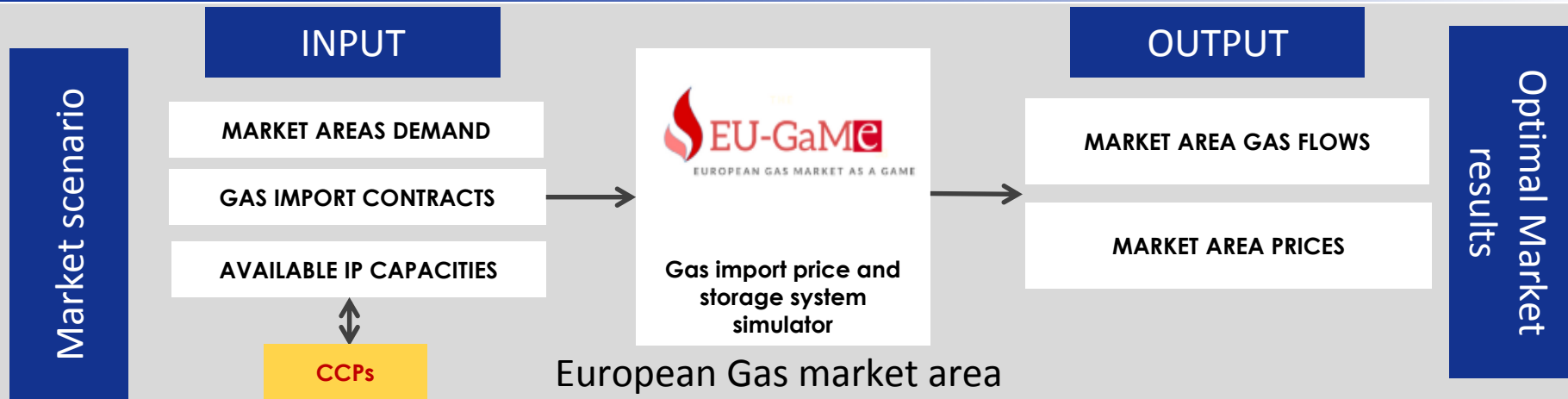
Our goal

- ❑ To support the qualitative analysis with a **quantitative assessment** of the impact of conditional products (CCPs) on **efficient use of the network**

Our methodology

- ❑ Simulation of the impact of **alternative capacity products availability** on the European gas market outcomes through a **market optimization tool**

EU-GaMe: Modelling details



Model features:

- ❑ For a **given market scenario** the model simulate the **optimal supply mix** that minimize costs to cover demand given a set of constraints (available capacities at interconnection points (IP) and eventual CCPs affecting them, demand, import costs and long term contracts, storage capacities and utilization rates)
- ❑ The model assumes a **fully competitive environment** with price takers market operators

 is REF-E proprietary model. The use of the model is subject to conditions

Steps of the analysis

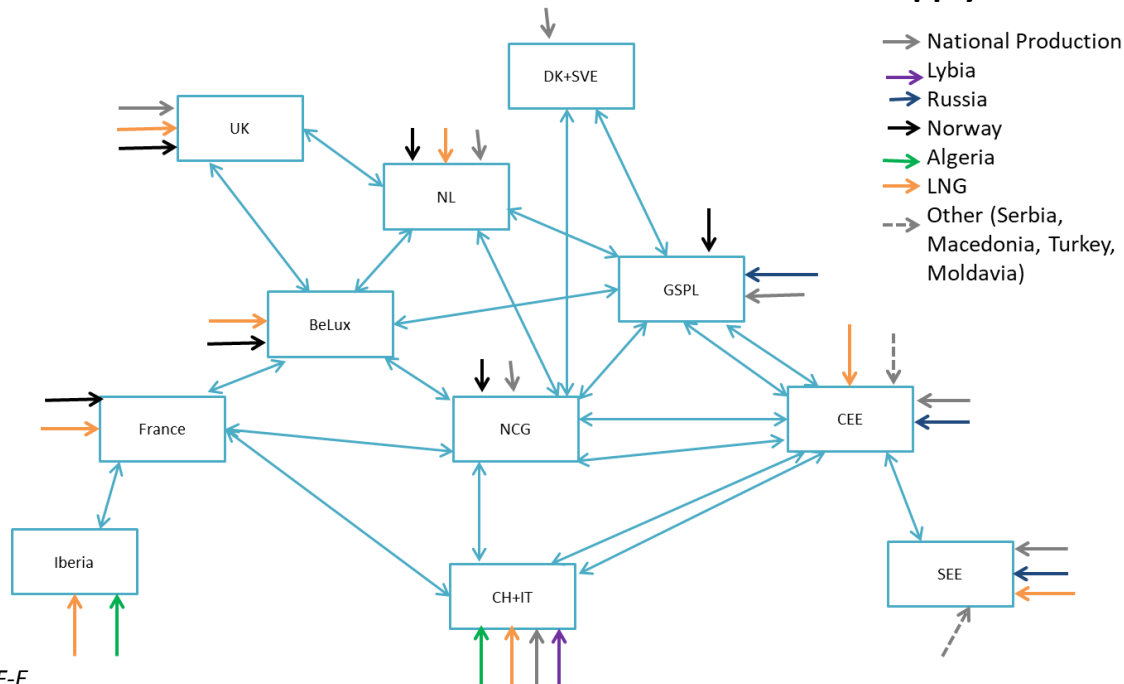
1. **Case specification**, including all the relevant constrains (demand, costs, ...)
2. Identification of **relevant CCPs** and alternative cases for **CCPs removal**
3. **Key findings** and preliminary conclusions

1 – Case Specification: Gas Network

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- For the purposes of this project, **EU-GaMe** has been adapted to model 23 countries, linked by almost 150 interconnection points (IPs) aggregated in 11 Market areas (MAs)
 - ✓ Interconnection points are mapped from ENTSO-G transparency data and have been aggregated depending on interconnected countries
 - ✓ Germany has been considered divided into two areas corresponding to NCG and GASPOOL

Network Structure

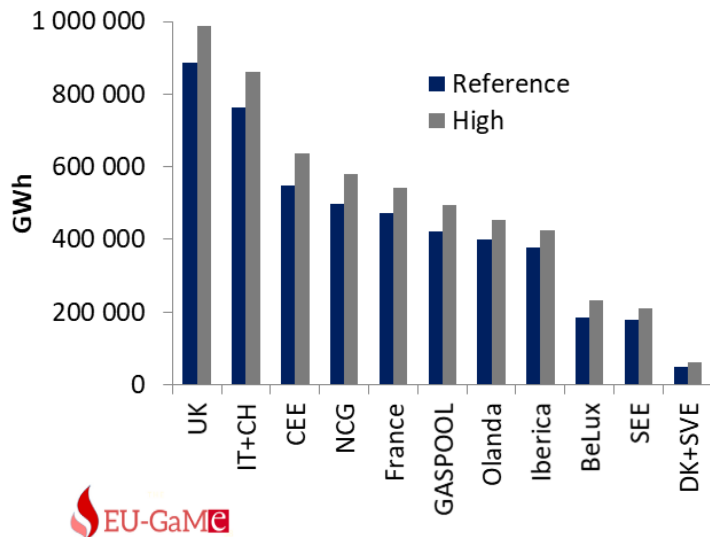


Source: REF-E

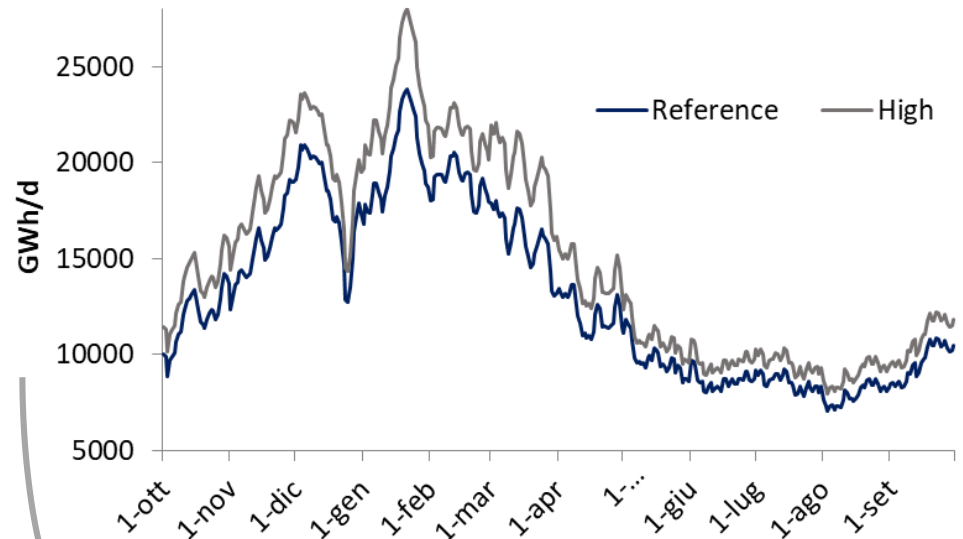
1 – Case Specification: Demand sensitivities

- **Time horizon:** one standard year
- **Granularity:** daily
- **Demand:** 2 scenarios
 - **Base:** monthly historical **average** demand (from GY12/13 to GY16/17)
 - **High:** monthly historical **highest** demand (from GY12/13 to GY16/17)

Total demand in MAs (GWh/year)



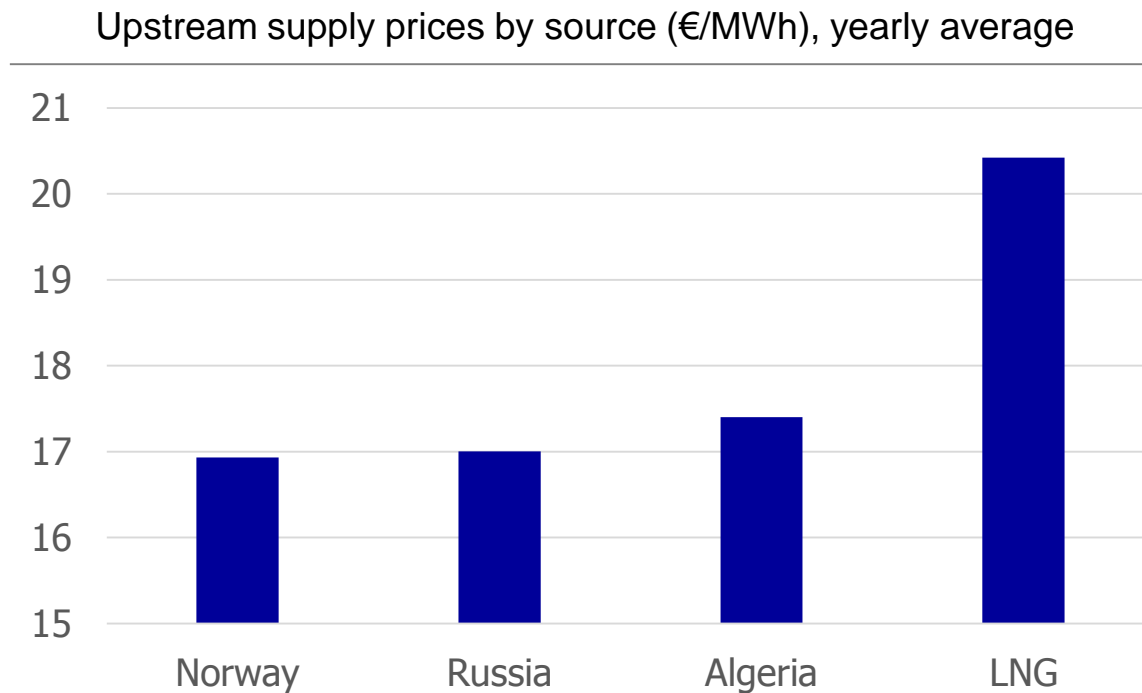
Overall EU demand: daily profiles



High demand: +15% Base demand

Upstream supply prices

- **Import prices** are the prevailing component of the wholesale prices
- **Source:** *Eurostat's COMEXT database*
- Price input with monthly profile



2 – CCPs: Identification of relevant CCPs

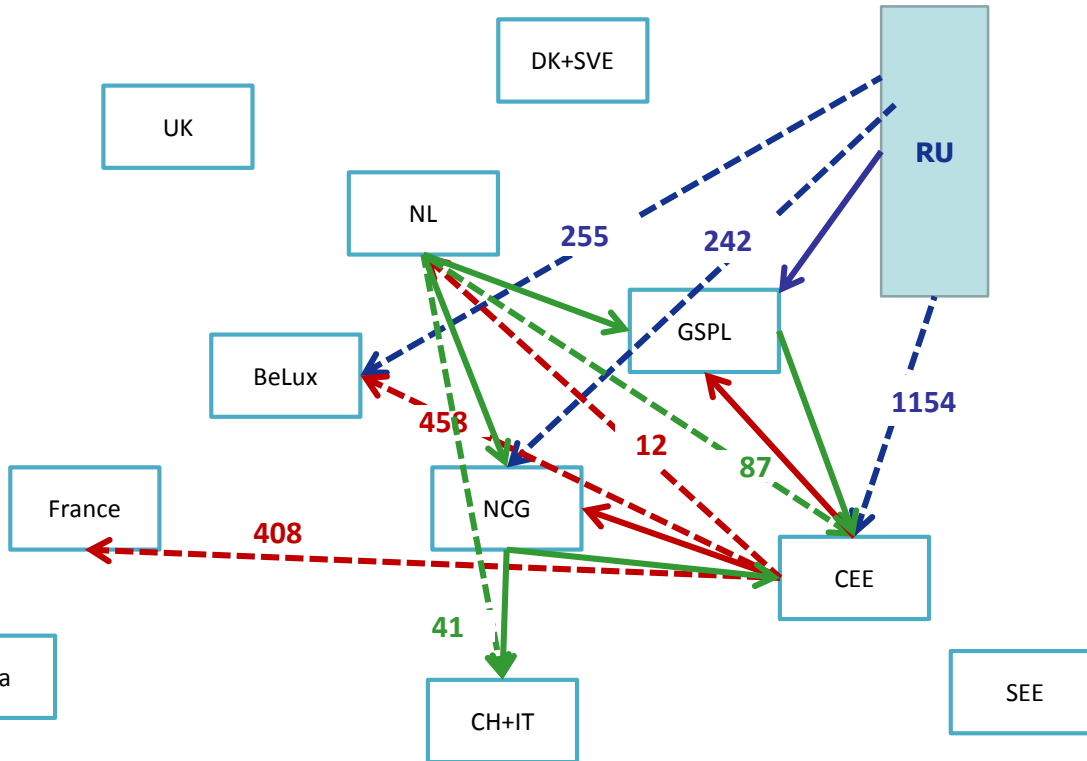


Relevant CCPs and their configuration in the model

Dotted lines: CCPs

Continuous lines: FZK impacted by CCPs

Numbers= available FIRM capacities in GWh/day



Conditionalities simulation

- Identification of CCPs affecting cross border trade
- CPP impose **entry-exit specific routes** preventing access to VTP (both on firm basis, BKZ or interruptible, DZK)
- CPP are offered with **10% discount** with respect to FZK

- Exclusion of bFZK and other CCPs affecting capacity allocation to internal exit point
- DZK considered similar to BZK

2 – CCPs: Conditionalities removal

CCPs are removed from the market (not offered by TSO)

CCPs are transformed into interruptible capacity

CCPs are transformed in freely allocable capacities (FZK)

INT case

- We have simulated a mix of this two solutions in the INT Case
- In particular in the INT case: CCPs involving EU internal routes have been removed from the market, while CCPs involving IPs from extra-EU countries are transformed into interruptible capacities with 80% average availability

FZK case

- We model this solution in the FZK Case, assuming **no investment costs**

3 - Key findings: supply variations

- Transforming CCPs into FZK allows an increase in **import from Russia**.
- Results from INT case **depends on demand level**

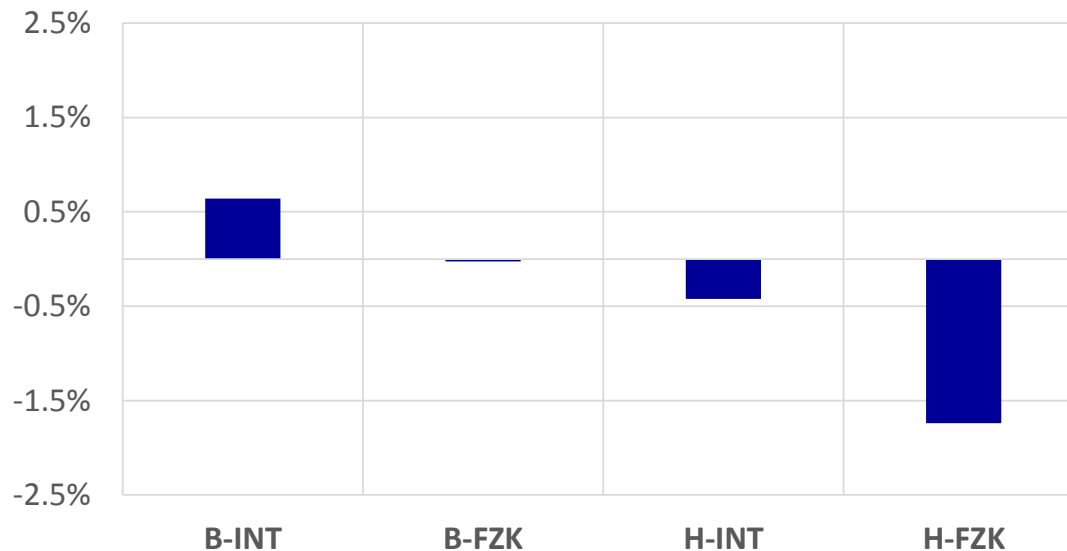
Supply variation with respect to the current CCP situation

	Base Demand		High Demand	
	FZK	INT	FZK	INT
LNG	1.5%	1.5%	-5.8%	-2.0%
Norway	-2.2%	1.3%	-1.1%	0.0%
Russia	0.8%	-2.2%	4.2%	0.7%

3 - Key findings: average prices

- In the **INT scenario** with average demand, prices **are higher**, due to lower availability of firm import capacity and increase in transport costs (10% tariff discounts removed)
- In the **FZK scenario**: when demand is normal, prices slightly decrease.
- However, when demand is **HIGH**, there are more opportunities to reduce costs and price decreases

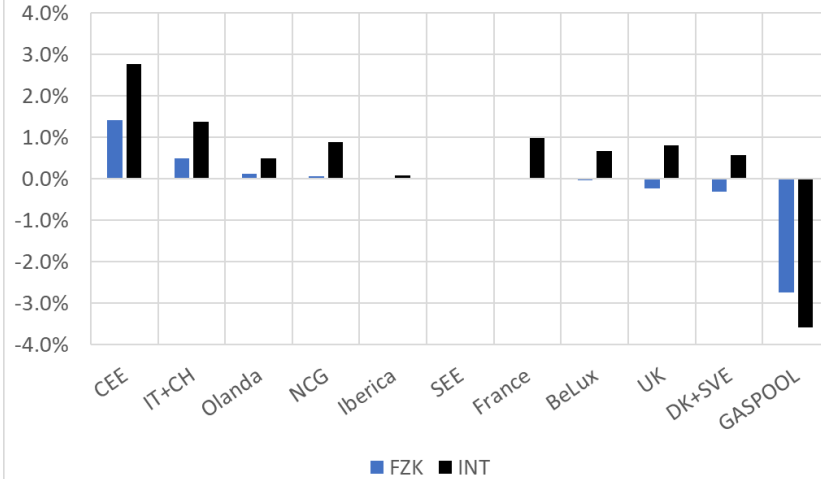
Average EU prices, variations in respect to current CCPs situation



3 - Key findings: Market Areas prices

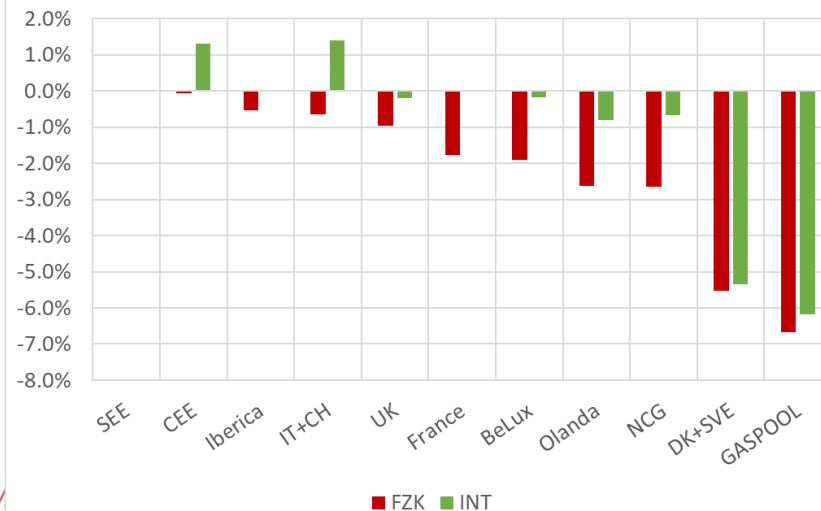
Area price variations in respect to current CCPs situation

Base demand



- **GASPOOL** area gains price reductions in all scenarios, in the range 3-7%
- **CEE** area suffers price increases in almost all scenarios, in the range 1 – 3%

High demand



- **NCG** results dependent on demand level
- **All other regions:** in general CCPs removal decreases prices only in the High demand, transformation to FZK scenario



3 - Key findings: Liquidity at VTPs

VTP liquidity with respect to the current CCP situation

	Base Scenario		High Scenario	
	FZK	INT	FZK	INT
GASPOOL	93.1%	48.3%	69.7%	46.3%
NCG	11.2%	13.4%	7.1%	3.6%
Olanda	3.5%	5.3%	4.0%	7.6%
DK+SVE	0.8%	2.4%	0.7%	4.9%
SEE	0.0%	0.0%	0.0%	0.0%
Iberica	0.0%	0.0%	-4.1%	0.1%
IT+CH	0.0%	0.0%	0.0%	0.0%
UK	-0.2%	0.2%	-3.4%	-2.2%
France	-0.4%	3.0%	3.9%	5.1%
BeLux	-2.7%	2.5%	-3.3%	-0.2%
CEE	-6.5%	-7.1%	-13.8%	-12.6%
All	6.2%	4.4%	2.5%	2.0%

- **GASPOOL** liquidity increases dramatically if DZK @Greifswald is turned into FZK
- **CEE** is the worst affected Market Area
- With CCPs removal **EU system** experiences an increasing of liquidity in every scenario

Preliminary Conclusions and Next Steps

- Under **base demand scenarios**, removal of CCPs mostly leads to **price increases**, except for Gaspool area
- Under **high demand case** (tight network), turning CCPs into freely allocable firm capacity would lead to **significant price decreases** in almost all market areas
- Removal of CCPs without capacity upgrading (INT) has mixed results depending on demand level and market areas.
- More work is necessary to assess impact of **probability-related CCPs** (bFZK, DZK) and interruptible capacity
- And to assess **welfare implications**, since costs of additional investment to transform CCPs in FZK is not included

**STUDY ON THE CONDITIONALITIES STIPULATED IN
CONTRACTS FOR STANDARD CAPACITY PRODUCTS FOR
FIRM CAPACITY SOLD BY GAS TSOs**

Thank you for your attention